

Front-line drawers

David Applegate makes a small chest of drawers to stand up to close scrutiny



‘It is essential to realise that such small articles can be picked up and looked at – examined really closely!’

Although expensive, walnut does set small pieces off well, giving ‘weight’ to a delicate structure

As an apprentice toolmaker and pattern-maker longer ago than most, I was obliged – along with every other apprentice at the time, I expect – to construct a toolchest for the smaller hand-tools of my intended profession. Drawer chests and small trinket boxes have inspired me as articles of interest and challenge for years, the challenge being always to get a good drawer fit, and to use the wood in such a manner as to promote its natural beauty – to justify the ‘atrocious’ of having felled the tree, and sawn to pieces one of the most attractive, useful and essential natural objects on the earth. Respect for the

material promotes economy of line, appreciation of the timber, and earnestness in completion. End of sermon.

Size matters

A small drawer chest is an exercise in corner joint work (like dovetails), and drawer construction and fitting, and it is essential to realise that such small articles can be picked up and looked at – examined really closely by anyone. So everything has to be the best you can make it – an unnecessary injunction to the regular *F&C* reader, perhaps!

Secondly, well-figured and attractively grained wood for both the outer carcass

and for the drawer fronts is essential. The overall size of this chest is 324mm (13in) by 250mm (10in) wide by 1085mm (82in) front to back, so for the wrap-around carcass, a piece 1320mm (52in) long by 230mm (9in) wide will suffice. I say wrap-around, because it is an attraction to see the grain pattern develop as your eye travels from one side to the other side. It flows, giving a feeling of continuity. This particular chest was made in English walnut, and although it is a costly timber, not much of it is needed – little more than two offcuts, really.

The carcass timber is first milled to flatness and thickness to 12mm (½in). ➤

Dovetailing the drawers

The drawers are probably the most important parts of this project: they are the primary reason for the construction of the chest in the first place. It therefore is essential that the drawer fronts are made from a board which has exceptional visual appeal – continuity of well-figured grain is a guiding principle in selection. As for construction, individual makers will use whatever method they prefer for the corners – I chose dovetails in this case because of their undoubted mystique and visual appeal. Again, if dovetails are to be cut, the maker will use whatever method is preferred to make them. I always refer to Alan Peters' book, *Cabinetmaking – the Professional Approach*. The drawers in this example are constructed using fine dovetails at the front and rear.

To emphasise the appeal of the joints that will be an important part of the attractiveness of this piece, contrasting timber should be used for the drawer sides and backs. Sycamore complements walnut excellently, and that is what was used here. The drawer configuration used here makes use of the front of the dust boards as stops, bearing on a shoulder at the bottom of each drawer front (except the bottom drawer) and this should be borne in mind when marking out the joints. Regarding the actual cutting, I do not believe that a practical router cutter can yet be made which will convincingly emulate the slenderness of a hand-cut joint, and all the dovetails in this chest are hand-cut, using traditional methods, except (and I make no apology here) for the graft and violence of removing the waste from the laps on the rear of the drawer fronts. A well controlled small parallel router bit, used here, makes for efficient working. To avoid damage to the benchtop, a piece of ply – or MDF – about 25mm (1in) thick, with a U-shaped cut-out is used to support the base of the router while cutting. It is best to plunge-cut all the way to a hair's breadth of full depth, rather than making several passes with a moving router; this minimises the possibility of the cutter 'running away' beyond the tail markings. Naturally the joint will have to be cleaned up by hand afterwards.



Plinth is mitred and keyed. A Forstner bit was used to get the shape, cutting the larger curve with a jigsaw



Marking from the tails onto the lapped fronts



Cleaning out waste on the fronts, note ply which helps support the router



Mortice and tenons routed, grooves cut for dust boards which also act as runners and drawer stops

Be sure the thicknesser knives are well adjusted, so that there is no taper across the width of the wood, or there may be problems with taper of the drawer box later. Then saw to width, and cut to produce the component parts of the carcass. If these have to be left overnight before further work, clamp them all together to prevent warping.

Next, with the sides and tops square and to length, rout out mortices in the top of the base and the underside of the top, allowing for shoulders on the tenons which will be formed on the sides. With construction of this kind, the only side grain meeting faces are the ends of the tenons, so they must fit fairly tightly, and go 'home' well, with the tenons filling the mortices.

Planning for the drawers

It is at this stage that the final depths of the drawer fronts need to be established. A set of graduated depths always looks well, and in this case, the 'formula' shown in Ernest Joyce's book *The Technique of Furniture Making* (page 251) was used. (See panel for details.) It is very important that the drawer runners match precisely on each carcass side, otherwise, the drawers will sag and bind and look awful! In this chest, dustboards are designed in, and have three functions: they act not only to prevent dust and drawer contents falling into lower drawers, and as rails and kickers, but they provide the drawer stops. So, again, accuracy of placing the grooves is essential.

From carcass to plinth

Using the tenon ends as the datum for the router fence, grooves for the dustboards are cut on each side in turn – use one setting for each side. Having now cut all the carcass joints, the individual machining of decorative grooves, radii, flutes, and tapers must be done. This chest had a small flute on the front and back corners of the sides, a rebate on the rear of the sides to take the back, and a slight taper on the edges of the top and base. The final operation before gluing up is to sand the inner and outer surfaces of all four of the carcass parts, with 180- and 240-grit; then to apply a coat of sanding sealer, and sand off with worn 240-grit, removing the dust with white spirit. Don't get any sanding sealer on the



mating surfaces! With this done, the assembly is dry assembled, thus getting the clamps to the right setting, and gaining the confidence that the whole thing will finish square, and out of winding. Having now become entirely satisfied that all necessary pre-assembly work is complete, and knowing that it is all going to go together properly, apply glue and go ahead. After the clamping, check squareness by measuring across the internal corners with two measuring sticks. Leave the removal of the excess glue until set – it then chips off, leaving no irritating and probably invisible smears. Invisible, that is, until the final finishing stage!

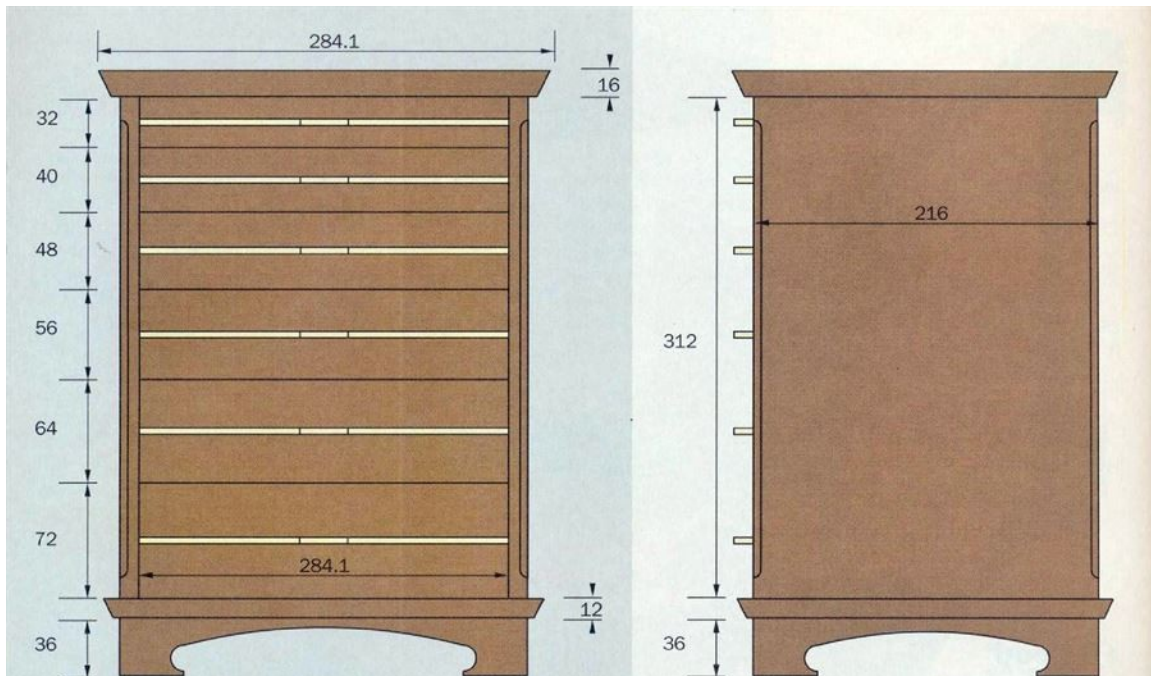
The dustboards are 3mm ($\frac{1}{8}$ in) thick, milled from offcuts of the previous

carcass work, and are machined and planed very finely to ensure a reasonably tight fit, bearing in mind that they must be inserted after assembling the carcass, so they cannot be too tight. They are finished off with a similar sanding sealer treatment, and shaped to fit, ensuring that they line up correctly at the front, concealing the stopped housing into which they slide. After the carcass has set, and the excess glue removed, the dustboards are glued in. Their grain direction is the same as the carcass, so there are no worries about differential shrinkage.

Making the plinth

To complete the carcass, the plinth needs to be constructed; this is made up from 15mm ($\frac{5}{16}$ in) stuff, mitred and keyed at

the corners, and with the bottom shaped as desired. To get the right shape, a 16mm ($\frac{5}{8}$ in) hole was bored 12mm ($\frac{1}{2}$ ins) from each end with a Forstner bit, and joined with a jigsawn curved tangent, blended in carefully. To avoid a sharp snagging point, the waste was removed with a vertical cut to the centre of the hole. The plinth is secured to the carcass base with small diameter brass woodscrews – the holes are plugged later. Now is the time to ensure that the carcass is suitable in all respects to receive the drawers and the back; so remove all the dust and glue excess from preliminary finishing, and apply a sparing coat of wax polish to the interior surfaces, including the dustboards. Do not get any on the outer faces or the



Graded drawers

1. Measure the total height of the drawer space
2. Decide on the number of drawers required
3. Decide on the scale of graduation
4. Calculate as in example below:

Drawer Space 36 ins

No. of Drawers 4

Scale of Graduation = 4,5,6,7.

Add together the numbers in the scale = 22

Drawer heights will then be:

1st Drawer: $36/22$ times 4 = approx $6\frac{1}{2}$ ins

2nd Drawer: $36/22$ times 5 = approx $8\frac{1}{4}$ ins

3rd Drawer: $36/22$ times 6 = approx $9\frac{3}{4}$ ins

4th Drawer: $36/22$ times 7 = approx $11\frac{1}{2}$ ins

This makes no allowance for thickness of drawer runners.



Dovetailing complete, ready to glue up, together with completed carcass

finishing oil will never dry!

Scented cedar bottoms

The bottoms of the drawers are made from cedar of Lebanon; this was chosen for its scent; concentrated in the closed drawers, it billows out as a drawer is opened. Securing the drawer bottom is simply done by countersunk woodscrews into the back. In my view, there is no need for fussy elongated slots here, provided the slot in the drawer front is deep enough to accommodate movement of the bottom. A sharp rap on the drawer bottom after fitting should make it rattle a bit; this will show that the bottom is not too tight in its housings.

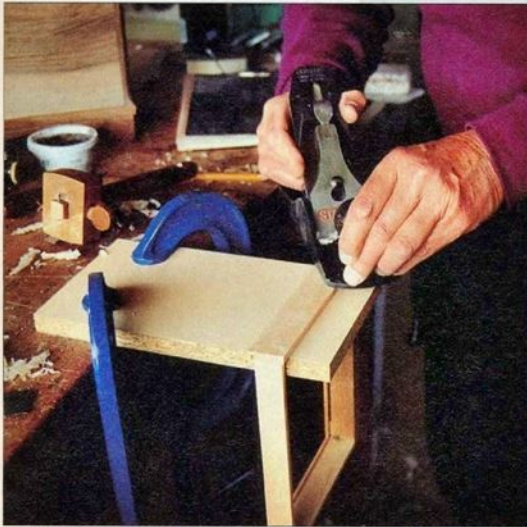
Fitting the drawers to the carcass, again, is covered in the Alan Peters'

book, and it must be emphasised that a good drawer fit achieved in a damp workshop will rattle about like a pea in a dry environment; as far as possible, and particularly with small pieces like this, make the workshop conditions like those to be found in service, ultimately.

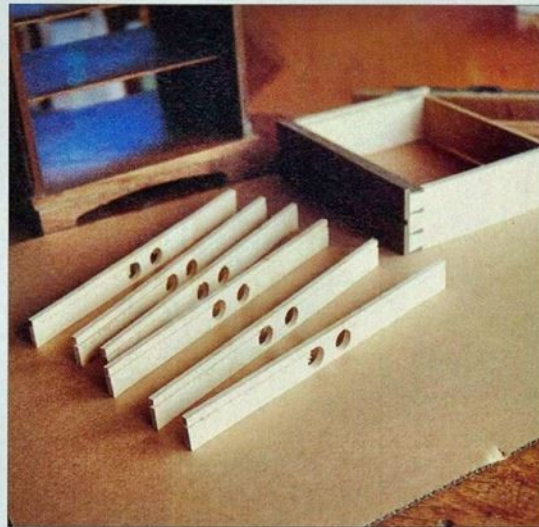
Handles

The choice of handle is an individual one, but it is far too important a design feature to be settled at the outset without further thought, because it is so dependent on the visual appearance of the part-finished chest, and has such a profound effect on the finished article. Handles are the user's tactile introduction to the piece, and must make

the user want to use it! So they must complement the shape and size of the carcass, and the colour, texture, and grain of the basic timber. In this case, sycamore was used, foreshadowing the internal drawer detailing. The shape shown in the photographs was achieved by drilling two 19mm ($\frac{3}{4}$ in) diameter holes, 19mm ($\frac{3}{4}$ in) apart in 6mm ($\frac{1}{4}$ in) by 25mm (1in) stuff with a Forstner bit, and sawing along to a tangential line from each end. The handle itself is formed from the remaining central piece, scooped on the underside, and rounded on the top, to make a slightly hooked shape to be grasped with finger and thumb. It is very important to smooth off the visible parts of this component, finishing with 320-grit Trimate. The handle is glued into a groove cut



A laminate-faced board, exactly the right size for the drawer, makes cleaning up this delicate structure a lot easier



A similar technique to that used on the plinth was adopted for the handles



Drawer front detail showing the handles set into a groove



As much attention is paid to the back, which is faced with suede

centrally in each drawer front. This is a very important part of the chest, for the reasons set out above. Do give much thought to the handles, because it is they, more than almost anything else, which announce the creativity and design sense embodied in the finished article.

The rear face

The chest itself, in use, may not be pushed up against a wall – the user may prefer it in the centre of a room, and the back of the chest may be as visible as the front. Thus the back must have visual appeal also – plain plywood will not do! This chest was fitted with a panelled back, the central panel being covered on its rear face with green suede. This was applied to a birch ply base (dyed black on the inside) using slightly diluted PVA,

although special leather glues are available. The golden rule here, when gluing up the frame in which the leather-covered panel sits, is not to get glue or any finishing materials on to the leather – it is useful to put the leather panel in a jacket of cling-film, and to remove it at the very end of all finishing and polishing. The back is secured to the carcass by wooden angle brackets, which are screwed to the rear sides of the carcass, being perfectly sure that they cannot prevent the drawers sliding home. To fit the back, use a long screwdriver with a captive screw facility – a length of plastic tube, say – to draw the back onto the angle brackets.

Finishing and polishing

The finishing of the chest is done

somewhat piecemeal – sanding sealer is applied to final flat surfaces, sanding with 240- and 320-grit. Then the sub-assembly is done; for example fitting the plinth, and the handles. That way, you are not confronted with difficult corners, where scratches occur whatever way you rub! Also, the residual dust from sanding is an excellent parting agent for excess glue! Get rid of all dust and debris. It is then necessary to use at least three coats of sanding sealer, sanding between each coat. Again, get rid of dust.

Finally, at least two coats of Danish oil on the finished carcass are applied. Sometimes it is necessary to smooth between coats – if so, use worn 240-grit paper. Wax polish sparingly, and the job is done. ■